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RAW SEQUENCE LISTING
PATENT APPLICATION: US/09/915,706A

DATE: 04/11/2002
TIME: 12:47:49

Input Set : A:\5112.app
Output Set: N:\CRF3\04112002\I915706A.raw

3 <110> APPLICANT: NELSON, DAVID R.
 5 <120> TITLE OF INVENTION: A LIVE, AVIRULENT STRAIN OF V. ANGUILLARUM THAT
 6 PROTECTS FISH AGAINST INFECTION BY VIRULENT V.
 7 ANGUILLARUM
 9 <130> FILE REFERENCE: 5112
 11 <140> CURRENT APPLICATION NUMBER: 09/915,706A
 12 <141> CURRENT FILING DATE: 2001-07-26
 14 <160> NUMBER OF SEQ ID NOS: 4
 16 <170> SOFTWARE: PatentIn Ver. 2.1
 18 <210> SEQ ID NO: 1
 19 <211> LENGTH: 3588
 20 <212> TYPE: DNA
 21 <213> ORGANISM: Vibrio anguillarum
 23 <220> FEATURE:
 24 <221> NAME/KEY: modified_base
 25 <222> LOCATION: (3572)
 26 <223> OTHER INFORMATION: a, t, c, g, other or unknown
 28 <400> SEQUENCE: 1
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 31 ccggaaaaggg aaaagtaaa atagcttttgc agatcagcct gttcttagcag ctttcaatg 180
 32 atcttttcg tcgttacgtt ttgaaaaatc tgacgactgc gtttgtattt caacaagcta 240
 33 agtggatcca atatcttat ttgataataa aactgtctgt tgcgtttgtt atatcctgtg 300
 34 aattgcagag tgctacatat acctgaaaaaa aaacgtttc cagaatctaa ttcgttaagac 360
 35 acacaaaacag ctttacctag gttttggta tcgatctcca tgtttgcgc gatggaaacg 420
 36 gaaaactgac acccgccgaa tacgctttcc tctccgatta attgcgtgac aatataactt 480
 37 ttgcttatctg aaagcttaat ggtgagggag cgggtttgtt gcttaatgc gttactgctc 540
 38 atattcaatt aattcactat taaataaaca gttctaaaag gctgtttattt ggatgaatat 600
 39 tcgaaattat cacataataa ttgatgttat tattacttgc tgcgttttttcaactttca 660
 40 tgcctatac atgtaatata ttgcgttta gacctaattt caaggttattt tgcgttttttca 720
 41 attattatct gaataatatg taatcgattt ctttgggtt atttttatgt ttgttttattt 780
 42 tttaatgacg gtgagcttgc gatttcatat ttgtttatgtt gacaacatct ttgtatgtt 840
 43 atttaagata ttgttaatgc atgaggggtt tgcgtgtatt ttgtttatata aatcataata 900
 44 aaatcaacaa tatatgttat ttgtgtctt ttatagttt tcttttaaag aggttaggtt 960
 45 acctaaaggt cgcctaaata tggcgtaaat tgccattgtt ataattcacc tcaaagatac 1020
 46 actattggca aattgacaaa tatgtcactt cgtatgaaac aatatttagt gatgttgc 1080
 47 ttgctgcaaa aataaaaatt ttctgggtt aaataactca aggcccttag cgttttccctt 1140
 48 tatcttaaaa tacagggaaat agcgattgaa gttaaattgac acttaagcaa atagtcaccc 1200
 49 taacagagca ggaacctatg ctttgcata agcatcaat tgagcaactt tctaaaccc 1260
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 52 ctgacgagag agatgcgttca caagaggcat gtctaaataa gtggaaagatt ctctctgaca 1440
 53 gttgtacga acagtttca aaaacaacca gagatatcga gctcatctca tggttgtt 1500

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54 ctgctcaatt ctttcgtat accacattag aaagtgcgtc gaatagcctt gagtggtag 1560
 55 cgatttaag tgagaagcac tggatcacc tcaaccctgt actaccgtt gaaacgctca 1620
 56 aatctgatga tgataaggc aaagaaagag agcaagcaga tgcggaaagg 1680
 57 tccaaactgtt cggcgatagc gaggaaagct cgattctta tgcggcggtg ctgcaactgc 1740
 58 ctttagtcgg ggaagtgcg tttttgact ttcaaagtgc agagagaaaa ggcgaaatca 1800
 59 gccaactgaa atctatgctt acgaccacgg tggcgaaga gcgttcgc attcaattca 1860
 60 agatggaaaa cgccaaacgt tggtcaccc aattagatcg tttgtcagcg ttggtgagca 1920
 61 ctaagtgtca ttctcttaggc agtcaaagta ccaacttcgg atttgcgaag tcactgttta 1980
 62 cccgttgta aaacgcttt gttcatctaa gtggattaa gttagcaccg aaagcggagg 2040
 63 ccaagacagt agagcaagag gttgccaaa gttcagttc tgaaggggag ctgccaagcc 2100
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 65 gccaacactt acacgcagga aacctctctg aactggtaa tttaaacaat atgaaccgag 2220
 66 acttagcttt ccattttgtt agagaagtct ctgattattt tcgcccagagc gaaccgcata 2280
 67 gccaatttc atttttgtt gaaaaagcga ttcgatgggg atatttatcc ttacctgagt 2340
 68 tgctgcgaga aatgtatgcg gaacaaaacg gtgacgctt tagtacgatt ttaatgccc 2400
 69 ccggattgaa tcatctcgat caggtttgc tgccggaggt gагtactcca acggtggca 2460
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 84 aacgaatggc gcccgtaaaga cggaaagagct gccgtttgtt gttggcgtca ttggcgtact 3360
 85 ttcaggacac aaaccagaat cagaaaaagt tgatttagaa gaggcagagt tcacgggtat 3420
 86 cgataaaagac aacttcgata cagtgtatggg gcaaattcac ccgcgtctt cgtacaaggt 3480
 87 tgataacaag cttgctaattt atgatagcca gtttgaagtg aacttgagcc tccggttcgtat 3540
 W--> 88 gaaagatttc cacccagaga acttagttga tnaaattttag ggcgtttaa 3588
 91 <210> SEQ ID NO: 2
 92 <211> LENGTH: 463
 93 <212> TYPE: PRT
 94 <213> ORGANISM: Vibrio anguillarum
 96 <400> SEQUENCE:
 97 Met Pro Leu Ser Lys His Gln Ile Glu Gln Leu Ser Lys Pro Leu Ser
 98 1 5 10 15
 100 Asp Asp Ser Ile Cys Gly Val Tyr Leu Lys Leu Glu Lys Ser Ala Phe
 101 20 25 30
 103 Arg Pro Leu Arg Asn Glu Phe Asn Val Ala Gln Thr Ala Leu Arg Lys
 104 35 40 45
 106 Leu Ser Gln Asn Pro Ser Ala Asp Glu Arg Asp Ala Leu Gln Glu Ala
 107 50 55 60
 109 Cys Leu Asn Lys Trp Lys Ile Leu Ser Asp Ser Leu Tyr Glu Gln Phe

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110	65	70	75	80
112	Ser Lys Thr Thr Arg Asp Ile Glu Leu Ile Ser Trp Phe Val Ala Ala			
113	85	90	95	
115	Gln Phe Leu Leu Asp Thr Thr Leu Glu Ser Ala Ala Asn Ser Leu Glu			
116	100	105	110	
118	Trp Leu Ala Asp Leu Ser Glu Lys His Trp Asp His Leu Asn Pro Val			
119	115	120	125	
121	Leu Pro Val Glu Thr Leu Lys Ser Asp Asp Asp Lys Gly Lys Glu Arg			
122	130	135	140	
124	Glu Gln Ala Asp Ala Lys Val Lys Ala Phe Phe Gln Leu Val Gly Asp			
125	145	150	155	160
127	Ser Glu Glu Ser Ser Ile Leu Tyr Ala Pro Val Leu Gln Leu Pro Leu			
128	165	170	175	
130	Val Gly Glu Val Thr Phe Phe Asp Phe Gln Ser Ala Glu Arg Lys Gly			
131	180	185	190	
133	Glu Ile Ser Gln Leu Lys Ser Met Leu Thr Thr Val Ala Gln Glu			
134	195	200	205	
136	Arg Phe Ala Ile Gln Phe Lys Met Glu Asn Ala Lys Arg Cys Val Thr			
137	210	215	220	
139	Gln Leu Asp Arg Leu Ser Ala Leu Val Ser Thr Lys Cys His Ser Leu			
140	225	230	235	240
142	Gly Ser Gln Ser Thr Asn Phe Gly Phe Ala Lys Ser Leu Leu Thr Arg			
143	245	250	255	
145	Val Glu Asn Ala Leu Val His Leu Ser Gly Ile Lys Leu Ala Pro Lys			
146	260	265	270	
148	Ala Glu Ala Lys Thr Val Glu Gln Glu Val Ala Glu Ser Ser Val Ser			
149	275	280	285	
151	Glu Gly Glu Leu Pro Ser His Met Asp Thr Lys His Ile Glu Arg Ile			
152	290	295	300	
154	Pro Met Ala Ser Glu Gln Ala Gln Thr Val Ser Gln His Leu His Ala			
155	305	310	315	320
157	Gly Asn Leu Ser Glu Leu Gly Asn Leu Asn Asn Met Asn Arg Asp Leu			
158	325	330	335	
160	Ala Phe His Leu Leu Arg Glu Val Ser Asp Tyr Phe Arg Gln Ser Glu			
161	340	345	350	
163	Pro His Ser Pro Ile Ser Phe Leu Leu Glu Lys Ala Ile Arg Trp Gly			
164	355	360	365	
166	Tyr Leu Ser Leu Pro Glu Leu Leu Arg Glu Met Met Ser Glu Gln Asn			
167	370	375	380	
169	Gly Asp Ala Leu Ser Thr Ile Phe Asn Ala Ala Gly Leu Asn His Leu			
170	385	390	395	400
172	Asp Gln Val Leu Leu Pro Glu Val Ser Thr Pro Thr Val Gly Ile Glu			
173	405	410	415	
175	Ser Pro Gln Thr Pro Gln Ala Lys Pro Ser Val Ser Asp Pro Arg Ser			
176	420	425	430	
178	Val Glu Glu His Val Ser Gln Thr Ser Pro Val Asp Thr Gln Ser Lys			
179	435	440	445	
181	Gln Asp Gln Lys Pro Gln Ser Ser Ala Thr Ser Ala Leu Ser Trp			
182	450	455	460	

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185 <210> SEQ ID NO: 3
 186 <211> LENGTH: 176
 187 <212> TYPE: PRT
 188 <213> ORGANISM: Vibrio anguillarum
 190 <400> SEQUENCE: 3

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 194 Ala Thr Ile Gly Gln Leu Glu Thr Ala Glu Gly Lys Asn Asp Gly Trp
 195 20 25 30
 197 Phe Ala Ile Asn Ser Tyr Ser Trp Gly Gly Ala Arg Asn Val Ala Met
 198 35 40 45
 200 Asp Ile Gly Asn Gly Thr Asn Ala Asp Ser Gly Met Val Gly Val Ser
 201 50 55 60
 203 Glu Val Ser Val Thr Lys Glu Val Asp Gly Ala Ser Glu Asp Leu Leu
 204 65 70 75 80
 206 Ser Tyr Leu Phe Asn Pro Gly Lys Asp Gly Lys Thr Val Glu Val Ala
 207 85 90 95
 209 Phe Thr Lys Pro Ser Asn Asp Gly Gln Gly Ala Asp Val Tyr Phe Gln
 210 100 105 110
 212 Val Lys Leu Glu Lys Ala Arg Leu Val Ser Tyr Asn Val Ser Gly Thr
 213 115 120 125
 215 Asp Gly Ser Gln Pro Tyr Glu Ser Leu Ser Leu Ser Tyr Thr Ser Ile
 216 130 135 140
 218 Ser Gln Lys His His Tyr Glu Lys Glu Gly Gly Glu Leu Gln Ser Gly
 219 145 150 155 160
 221 Gly Val Val Thr Tyr Asp Leu Pro Thr Gly Lys Met Thr Ser Gly Lys
 222 165 170 175
 224 <210> SEQ ID NO: 4
 225 <211> LENGTH: 117
 226 <212> TYPE: PRT
 227 <213> ORGANISM: Vibrio anguillarum
 229 <220> FEATURE:
 230 <221> NAME/KEY: MOD_RES
 231 <222> LOCATION: (113)
 232 <223> OTHER INFORMATION: Variable amino acid
 234 <400> SEQUENCE: 4

235 Met Ala Leu Asn Ser Gln His Lys Arg Val Ser Lys Asn Arg Val Ser
 236 1 5 10 15
 238 Ile Thr Tyr Asp Val Glu Thr Asn Gly Ala Val Lys Thr Lys Glu Leu
 239 20 25 30
 241 Pro Phe Val Val Gly Val Ile Gly Asp Phe Ser Gly His Lys Pro Glu
 242 35 40 45
 244 Ser Glu Lys Val Asp Leu Glu Glu Arg Glu Phe Thr Gly Ile Asp Lys
 245 50 55 60
 247 Asp Asn Phe Asp Thr Val Met Gly Gln Ile His Pro Arg Leu Ser Tyr
 248 65 70 75 80
 250 Lys Val Asp Asn Lys Leu Ala Asn Asp Asp Ser Gln Phe Glu Val Asn
 251 85 90 95
 253 Leu Ser Leu Arg Ser Met Lys Asp Phe His Pro Glu Asn Leu Val Asp

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Input Set : A:\5112.app

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254	100	105	110
W--> 256 Xaa Ile Glu Pro Leu			
257	115		

VERIFICATION SUMMARY DATE: 04/11/2002
PATENT APPLICATION: US/09/915,706A TIME: 12:47:50

Input Set : A:\5112.app
Output Set: N:\CRF3\04112002\I915706A.raw

L:88 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1
L:256 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4